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Extent of implementation of the research and development strategies of national ICT guidelines in public universities in Anambra state

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Abstract
The study determined the extent of implement of the research and development (R&D) strategies of national ICT guidelines in public universities in Anambra State. Two research questions guided the study and two hypotheses were tested at 0.05 level of significance. The descriptive survey design was used in the study. The population of the study comprised 185 lecturers in the Department of Educational Management and Policy from two public universities in Anambra State. The instrument for data collection was a structured questionnaire which was developed by the researchers. The questionnaire was validated by three experts in the faculty of education, Nnamdi Azikiwe University, Awka. To establish the reliability estimate of the instruments, a single administration of the instruments was adopted through a pilot test. The data were analyzed using Cronbach Alpha to measure the internal consistency of the instrument and reliability co-efficient values of 0.87 and 0.84 were obtained for each of the clusters respectively with a general reliability coefficient of 0.86. Mean, standard deviation and t-test were used to analyze data for the study. Finding of the study revealed that the research and development strategy of increasing fund allocation to R&D initiatives to improve new pedagogies in public universities was implemented to a low extent. Finding also showed that the research and development strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs was implemented to a low extent. Findings revealed that the respondents' years of experience did not influence their opinion. The researchers therefore recommended among others that the federal and state government should be more committed to the ICT guideline by making funds readily available to administrators of universities. It was also recommended that administrators of tertiary institutions should collaborate with private ICT firms in so as to increase research efforts in universities.

Keywords: implementation, research and development, strategies, national ICT, guidelines

Introduction

The advent of information and communication technology (ICT) is reshaping the way human activities are conducted. Advancement in technology has permeated all sectors of the economy including education. ICT involves the integration of telecommunication, computing and broadcasting through the use of digital information. ICT can store, retrieve, manipulate, transmit and receive information electronically in a digital form. ICT encompasses the broad fields of information and communications by means of computer and telecommunication; tools that are being increasingly used for organizational or personal information processing in all sectors of economy and the society as a whole (Thomas & Oladejo, 2017) [10].

ICT refers to a "wide range of technical instruments and resources used to communicate, help in the creation, dissemination, storage, and management of information." Educational institutions are anticipated to play a critical role as the engine for knowledge development and the learning environment in the present information age (Nannim, Yushau & Gital, 2018) [5]. As a result, information communication becomes an essential tool for aiding this effort. ICT has become an indispensible element of our daily lives and cannot be avoided. This is because the use of ICT in education has become one of the most successful aspects in school development.

ICT also refers to any types of computer and communication equipment and software that are used to produce, store, transmit, interpret, and alter data in its different formats. Information and communication technologies serve three key purposes (Ogunode, Nasir, Yahaya & Jegede, 2021) [8]. Ogunode, Nasir, Yahaya and Jegede stated that ICT is useful for student administration, faculty administration, and school administration. ICT is used for student admissions; computers are used for student registration / enrolment; time tables / class schedules are planned for students; computers are used for student attendance in classes; ICT is used to communicate student academic details to their parents / guardians via e-media; e-media is used for notifications regarding hostel accommodation; and e-media is used for notifications regarding transportation.

The usefulness of ICT to academic and administrative staff in higher education institutions like universities has also been noted (Hamilton-Ekeke & Mbachu, 2015) [3]. Furthermore, research have demonstrated that incorporating ICT into education provides many types of Multimedia channels that give a diversity of techniques and skills (Nusir, Alsmadi, Al-Kabi, & Sharadgah, 2013) [7]. The use of ICT in education has also been proven to be beneficial in terms of guiding students' self-learning, critical evaluation of students' performance, and promotion of high-quality communication skills (Barakabitze, 2014) [1]. It is in the realization of the benefits that are accrued from integrating ICT in universities and other academic institutions that the Federal Government of Nigeria 2001 designed the National ICT policy. This policy led to the creation of the National Information Technology Development Agency (NITDA).

NITDA's goals include ensuring that ICT resources are easily accessible to support effective national development and integrating ICT into the core of education and training (NITDA, 2017) [6]. Sadly, 21 years post the design of the ICT policy, the state of ICT infrastructure and skills in public universities in Nigeria did not improve. This is evident in some studies which indicated that the level of ICT tools available for developing the human capital of the nation's ivory towers are inadequate. According to Mustapha, Shafiu and Abdulhamid (2017) [4], universities in Nigeria do not have the necessary ICT tools to properly equip students with the desired and competencies need for the world of work given that society is becoming increasingly digitalized.

It is in a bid to improve the state of ICT infrastructure in the country that the Federal Ministry of Education further promulgated the National ICT implementation guideline in 2019 [2] which sought to improve on the level of ICT provisions in schools especially in the universities (Federal Ministry of Education, 2019). The FME proposed the research and development strategy as one of its strategies for realizing the goal of ensuring high ICT implementation is schools. Furthermore, the FME believed that for education to be engaging, empowering, enriching, and enabling for sustained socio-economic development, research and development (R&D) are essential. Therefore, R&D in education needs to receive the essential attention by adopting strategies like increasing fund allocation to R&D initiatives to improve new pedagogies, teaching and learning, administration techniques and tools amongst others. Another strategy is providing and encourage opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs. Despite these guidelines, it appears like little or no improvements have been made in improving the state of ICT in schools in Nigeria especially at the universities. Despite research showing that ICT is essential for improving teaching and learning, the ICT environment at universities is filled with a variety of obstacles that prevent its full integration into teaching and learning (Yushua & Nannim, 2018) [5, 12]. The researcher therefore sought to investigate the extent to which some strategies in the National ICT implementation guidelines like the strategy on research and development has been implemented in universities in Anambra State. Consideration was also made to determine the influence of years of experience of the respondents as a moderating variable which could influence the view of the lecturers on the extent of implementation of the strategies. Yushua & Nannim, (2020) [11] found years of experience to be a significant factor influencing lecturers' opinion on ICT. However, Olafare, Adeyanju and Fakorede (2018) [9] in their study found a significant difference between the less experienced and the experienced lecturers. These views have not be proven to be the case empirically among lecturers in public universities in Anambra State. It is against this background that the researcher investigated the extent of implementation of the research and development strategies of national ICT guidelines in public universities in Anambra State.

Statement of the Problem

The form and manner in which ICT facilities are used for academic purposes varies greatly, especially in industrialized nations with few infrastructure issues. However, because of the so-called "digital divide," the problem is more significant in underdeveloped nations like Nigeria. The Nigerian National Policy on Education has recognized the contribution of ICT to national development and, as a result, advocated the integration of ICT in all levels of education in an effort to close this digital divide. The National University Commission's (NUC) policies supporting universities' ICT development strategies are particularly encouraging for higher education. In accordance with this, the Nigerian Universities Commission (NUC) launched the Nigerian Universities Management of Information System (NUMIS) project as part of a deliberate policy to encourage Nigerian universities to adopt ICT. The National Guideline for the implementation guideline for ICT in education id one of the latest policies geared at improving the integration of ICT in schools especially in the universities. However, despite these policy documents, it is still not clear how far this policy document has been implemented in universities in Anambra State in particular and Nigeria in general. This study seeks to fill that gap by determining the extent of implementation of the research and development strategies of national ICT guidelines in public universities in Anambra State.

Research questions

The following research questions guided the study:

1. What is the extent of implementation of the strategy of increasing funding allocation for Research and development initiatives to improve new pedagogies in public universities in Anambra State?
2. What is the extent of implementation of the strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in public universities in Anambra State?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the mean ratings of experienced (Above 10 years) and less experienced (Below 10years) lecturers on the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies in public universities in Anambra State.
2. There is no significant difference in the mean ratings of experienced (Above 10 years) and less experienced (Below 10years) lecturers on the extent of implementation of the strategy of providing opportunities for research and development initiatives that are result-oriented and geared towards meeting national needs in public universities in Anambra State.

Method

Descriptive survey design was utilized for this study. The population of the study was made of 185 lecturers of the Department of Educational Management in two public universities in Anambra State. The universities are Chukwuemeka Odumegwu Ojukwu University, Igbariam Campus and Nnamdi Azikiwe University Awka. The instrument for data collection was a questionnaire which was developed by the researchers based on the sub-strategies as proposed in the national ICT implementation guideline. The instrument was titled "Questionnaire on the

Extent of Implementation of the Research and Development Strategies of the National ICT Implementation Guidelines (QEIRDSNICTIG)". The instrument has two sections; A and B. Section A contains one item eliciting information on the respondents years of experience. Sections B contains 20 items the Extent of Implementation of the Research and Development Strategies of the National ICT Implementation Guidelines. Section B1 contains eight items on the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies. Section B2 contains 12 items on the extent of implementation of the strategy of providing opportunities for research and development initiatives that are result-oriented and geared towards meeting national needs. The instrument was structured on a 4- point rating scale of Very High Extent (VHE), High Extent (HE), Low Extent (LE) and Very Low Extent (VLE). The instrument was validated by three experts in the Department of Educational Management and Policy, Faculty of Education, Nnamdi Azikiwe University.

The instrument was pilot tested on 10 lecturers of Educational management and policy/planning in Enugu State. The application of Cronbach Alpha on the data collected yielded coefficient values of .87 and 0.84 were obtained for each of the clusters respectively with a general reliability coefficient of 0.86. The researcher administered the questionnaire by sending copies of the questionnaires to the e-mails and Whatsapp messages of the business educators. In cases where it was difficult administering the instrument electronically.

An appointment was made and the instrument was administered on the spot and retrieved. Out of the 185 copies of questionnaire administered, 162 copies were returned and used for the analysis of data for the study. The mean value was used to answer the research questions while the standard deviation was used to ascertain the homogeneity or otherwise of the respondents' ratings. In analyzing the mean value, any item with mean rating between 2.50 and above was regarded as high extent while any item below 2.50 was regarded as low extent. For the hypothesis, t-test was used to test the hypothesis at 0.05 level of significance. Meanwhile, a null hypothesis was rejected where the P - value is less than the stipulated level of significance (.05). Inclusively, if the p- value is greater than or equal to the stipulated level of significance (.05), the hypothesis was acceptable.

Results

Research question 1

What is the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies in universities in Anambra State?

Table 1: Respondents' Mean Rating on the Extent of Implementation of the Strategy of Increasing Funding Allocation for Research and Development Initiatives to Improve New Pedagogies in Universities (N=162)

S/No	Item Description	Mean	SD	Remarks
1	Develop instruments for baseline survey of existing use of ICT in teaching	2.28	.87	Low Extent
2	Develop instruments for baseline survey of existing use of ICT in t learning	2.32	.92	Low Extent
3	Develop instruments for baseline survey of existing use of ICT in research	2.23	.85	Low Extent
4	Develop instruments for baseline survey of existing use of ICT in administration	2.31	1.01	Low Extent
5	Determine needs based on global trends	2.19	.95	Low Extent
6	Provision of fund in the annual budget by Federal and State Governments	2.37	.87	Low Extent
7	Build capacity on Research Proposal writing	2.49	1.06	Low Extent
8	Synergise with stakeholders for provision of funds	2.22	.98	Low Extent
	Cluster Mean	2.30		Low Extent

Data in Table 1 reveal that the respondents rated all the items with mean ratings ranging from 2.19 to 2.49 on the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies in universities in Anambra State to a low extent. The standard deviations ranging between .85 to 1.06 indicate that the respondents' opinions were close. The cluster mean of 2.30 that the research and development strategy of increasing fund allocation to R&D initiatives to improve new pedagogies in public universities was implemented to a low extent.

Research Question 2

What is the extent of implementation of the strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in universities in Anambra State?

Table 2: Respondents' Mean Rating on the Extent of Implementation of the Strategy of Providing Opportunities for R&D Initiatives that are Result-Oriented and Geared Towards Meeting National Needs (N=162)

S/No	Item Description	Mean	SD	Remarks
1	Identify stakeholders ready to give grants research grants	2.18	.81	Low Extent
2	Liaise with identified stakeholders for support	2.11	.87	Low Extent
3	Provide a template for eligibility to access research grants/funds	2.39	.73	Low Extent
4	Provide list of eligible beneficiaries to access research grants/funds	2.48	.82	Low Extent
5	Provide a template on eligibility for research awards	2.37	.72	Low Extent
6	Institutionalize awards, prizes and commendations	2.43	.83	Low Extent
7	Encourage networking and collaboration	2.40	.78	Low Extent
8	Hold meetings, workshops, seminars with institutions and stakeholders receiving funds	2.49	.85	Low Extent
9	Monitor and evaluate the use of R&D funds	2.21	.89	Low Extent
10	Produce reports on research funds	2.19	.99	Low Extent
11.	Sanction institutions on level of compliance	2.35	1.04	Low Extent

12.	Commend institutions on level of compliance	2.44	.91	Low Extent
	Cluster Mean	2.34		Low Extent

Data in Table 2 reveal that the respondents rated all the items with mean ratings ranging from 2.11 to 2.49 on the extent of implementation of the strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in universities in Anambra State to a low extent. The standard deviations ranging between .73 to 1.04 indicate that the respondents' opinions were close. The cluster mean of 2.30 that the research and development strategy of implementation of the strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in universities was implemented to a low extent.

Hypothesis 1

There is no significant difference in the mean ratings of experienced (Above 10 years) and less experienced (Below 10years) lecturers on the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies in universities in Anambra State.

Table 3: Summary of t-test analysis on the Extent of Implementation of the Strategy of Increasing Funding Allocation for Research and Development Initiatives to Improve New Pedagogies in Universities based on Years of Experience

Variable	N	C	SD	D f	*ά*	p-value	Decision
Eperienced Lecturers	**110**	**2.08**	**.74**				
				160	.05	.28	Not Significant
Less Experienced	52	2.39	.82				

Data in Table 3 showed that the p-value of .28 is greater than .05 alpha level of significance. This means that there is no statistical significant difference in the mean ratings of experienced and less experienced lecturers on the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies in universities in Anambra State. The hypothesis was therefore accepted.

Hypothesis 2

There is no significant difference in the mean ratings of experienced (Above 10 years) and less experienced (Below 10years) lecturers on the extent of implementation of the strategy of providing opportunities for research and development initiatives that are result-oriented and geared towards meeting national needs in universities in Anambra State.

Table 3: Summary of t-test analysis on the Extent of Implementation of the Strategy of Providing Opportunities for R&D Initiatives that are Result-Oriented and Geared Towards Meeting National Needs in Universities based on Years of Experience

Variable	N	C	SD	D f	*ά*	p-value	Decision
Eperienced Lecturers	110	2.11	.85				
				160	.05	.89	Not Significant
Less Experienced Lecturers	52	2.47	.87				

Data in Table 3 showed that the p-value of .89 is greater than .05 alpha level of significance. This means that there is no statistical significant difference in the mean ratings of experienced and less experienced lecturers on the extent of implementation of the strategy of providing opportunities for research and development initiatives that are result-oriented and geared towards meeting national needs in universities in Anambra State. The hypothesis was therefore accepted.

Discussion

Findings of the study revealed that the research and development strategy of increasing fund allocation to R&D initiatives to improve new pedagogies in public universities was implemented to a low extent. This finding is an indication of the challenges facing university education in Nigeria. the inability of the federal ministry of education and her agencies to meet up with the proposed strategy for increasing fund allocation for improving ICT integration is a major challenge to the development of quality graduates and human capital for the nation. This finding is in agreement with Mustapha, Shafiu and Abdulhamid (2017) [4] who decried the poor support of the federal government for funding the integration of ICT in education in Nigeria. Hamilton-Ekeke and Mbach (2015) [3] stated that government have only paid lip service towards the development of education in Nigeria and that this is evident in the poor allocation of funds to schools for providing ICT. Further, findings revealed that experienced and less experienced lecturers are in agreement on the extent of implementation of the strategy of increasing funding allocation for research and development initiatives to improve new pedagogies in universities in Anambra State. This revealed that the lecturers irrespective of their years of work experience agree that the research and development strategy of increasing fund allocation to R&D initiatives to improve new pedagogies in public universities was implemented to a low extent.

In the same vein, finding of the study revealed that the research and development strategy of implementation of the strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in universities in Anambra State. This finding shows that opportunities were not provided for the stimulation of R &D initiatives that would promote the integration of ICT in education. This finding is in agreement with Yushua and Nannim (2020) [11] who reported that despite the policy documents on the development of ICT in universities, university education is still faced with plethora of problems which has impeded successful ICT integration. Ogunode, Nasir, Yahaya and Jegede (2021) [8] stated that the federal government and the ministry of education have not shown

enough commitment towards ensuring the availability of ICT resources in schools. This lack of commitment has resulted in poor ICT skills acquisition in the university community and threatens the training of students for global leadership. Findings of the study also revealed that experienced and less experienced lecturers are in agreement on the extent of implementation of the strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in universities in Anambra State. This revealed that the lecturers irrespective of their years of work experience agree that the research and development strategy of strategy of providing opportunities for R&D initiatives that are result-oriented and geared towards meeting national needs in public universities in Anambra State was implemented to a low extent.

Conclusion

Based on the findings of the study, the researcher concludes that the implementation of the research and development strategies of the National ICT implementation guidelines in public universities has not been implemented. Given the importance of ICT in the development of the human capital development of the nation it is pertinent that the research and development strategies should be prioritized as options for improving ICT in education. This requires cooperation from all stakeholders in the university system.

Recommendations

Based on the findings of the study, the researchers made the following recommendations:

The federal and state government should be more committed to the ICT guideline by making funds readily available to administrators of universities.

Administrators of tertiary institutions should collaborate with private ICT firms in so as to increase research efforts in universities.

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